
Human Embryonic Stem Cells and Remyelination in a Viral Model of Demyelination

Grant Award Details

Human Embryonic Stem Cells and Remyelination in a Viral Model of Demyelination

Grant Type: SEED Grant

Grant Number: RS1-00409

Investigator:

Name: Thomas Lane

Institution: University of California, Irvine

Type: PI

Disease Focus: Multiple Sclerosis, Neurological Disorders, Immune Disease

Human Stem Cell Use: Embryonic Stem Cell

Award Value: \$368,081

Status: Closed

Progress Reports

Reporting Period: Year 2

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Reporting Period: NCE

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Grant Application Details

Application Title: Human Embryonic Stem Cells and Remyelination in a Viral Model of Demyelination

Public Abstract:

Multiple sclerosis (MS) is the most common neurologic disease affecting young adults under the age of 40 with the majority of MS patients diagnosed in the second or third decade of life. MS is characterized by the gradual loss of the myelin sheath that surrounds and insulates axons that allow for the conduction of nerve impulses – a process known as demyelination. For unknown reasons, the ability to remyelinate axons is impaired in MS patients making recovery of motor skills difficult. Therefore, developing novel and effective approaches to remyelinate axons in MS patients would dramatically improve the quality of life of many MS patients. The experiments described in this research proposal utilize a well-accepted model of MS to further characterize the potential clinical applicability of human embryonic stem cells (hESCs) to remyelinate axons. Such knowledge is crucial in order to increase our understanding of stem cells with regards to treatment of numerous human diseases including MS.

Statement of Benefit to California:

California is the most populated state in the USA. As such, the costs of medical care for the treatment of patients with chronic diseases such as multiple sclerosis (MS) represents a significant and growing problem. MS is the most common neurologic disease affecting young adults under the age of 40 with the majority of MS patients diagnosed in the second or third decade of life. Given the population of California, there are many MS patients living in the state and the numbers will undoubtedly grow. It is unusual for MS patients to die from the disease and many will live normal life spans but will develop an increasing array of medical problems stemming from the progression of neurologic damage associated with MS. MS is characterized by the gradual loss of the myelin sheath that surrounds and insulates axons that allow for the conduction of nerve impulses – a process known as demyelination. For unknown reasons, the ability to remyelinate axons is impaired in MS patients making recovery of motor skills difficult. Therefore, developing novel and effective approaches to remyelinate axons in MS patients would dramatically alleviate some of the burden placed on the medical community by improving the quality of life of many MS patients. The experiments described in this research proposal utilize a well-accepted model of MS to further characterize the potential clinical applicability of human embryonic stem cells (hESCs) to remyelinate axons. Such knowledge is crucial in order to increase our understanding of stem cells with regards to treatment of human diseases with the ultimate goal of limiting patient suffering and reducing medical costs.

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